

REMARKS

Applicant wishes to thank the Examiner for his review of the present application. Claims 1-4, 8-10, 12-31, and 48-55 are pending in the application. Applicants have amended claims 30 and 31.

35 U.S.C. §103(a)

The office action rejected claims 1-4, 8-10, 12-31, and 48-55 under 35 U.S.C. §103(a) as being unpatentable over Jiang et al. (U.S. patent no. 6,442,287), hereinafter referred to as “Jiang,” in view of Wheeler et al (U.S. patent no. 5,200,993), hereinafter referred to as “Wheeler.”

Claim 1 defines, in relevant part, a method to derive quantitative information from an x-ray image in a network environment. Among other things, the method includes providing a digitized x-ray image on a local computer, transmitting the image to a remote computer, and analyzing the image at the remote computer to derive quantitative information on trabecular bone structure. The quantitative information may include trabecular thickness, two-dimensional spaces between trabeculae, and/or three-dimensional spaces between trabeculae.

Jiang fails to teach or suggest such a method. Rather, Jiang teaches an automated method for analyzing bone that obtains bone mineral density and a measure of bone geometry from an image. Nowhere does Jiang teach or suggest deriving quantitative information including trabecular thickness, two-dimensional spaces between trabeculae, and/or three-dimensional spaces between trabeculae. In fact, the only mention of thickness within Jiang refers to overall bone thickness, and femoral neck and shaft thickness, which are not trabecular thicknesses. Additionally, Jiang makes no mention of two-dimensional and three-dimensional spaces between the trabeculae.

The office action suggests Jiang discloses deriving two-dimensional or three-dimensional spaces between trabeculae by determining the Minkowski dimension. Applicants respectfully disagree. Although the office action is correct that the Minkowski dimension (otherwise known as the packing or box-counting dimension) is a way to determine a fractal dimension, the fractal dimension determined using the Minkowski

does not constitute the two-dimensional or three-dimensional spaces between trabeculae. Rather, as is known in the art, the fractal dimension is a measure of how completely a fractal fills a space and/or how complicated a self-similar figure is. To determine the fractal dimension, a grid of boxes is typically placed over the fractal, and the number of “boxes” required to cover the fractal/figure is repeatedly measured as the grid is made finer. In other words, the Minkowski dimension measures the fractal dimension of an object/figure itself, not the spaces between sections of the object. For example, if the object in question is a tree, the Minkowski/fractal dimension will be a measure of the tree’s trunk and branches, not the spaces between the branches. Therefore, the Minkowski dimension is not a measure of the two-dimensional or three-dimensional spaces between trabeculae, as required by claim 1.

For the sake of discussion, even if the Minkowski dimension was able to measure spaces between portions of the object/fractal (e.g., the two-dimensional and three-dimensional spaces between the trabeculae), Jiang fails to teach or suggest using the Minkowski dimension for such a purpose. Rather, Jiang uses the Minkowski dimension to characterize the overall textural roughness of the image texture (col. 3, lines 29-35, col. 17, lines 9-10). Jiang states that the textural roughness is a function of the trabecular elements projected onto the X-ray image plane (col. 17, lines 11-13). In other words, Jiang uses the Minkowski dimension to determine the textural roughness of the object/fractal itself, not the two-dimensional or three-dimensional spaces between the trabeculae, as required by claim 1.

Additionally, Wheeler fails to satisfy the deficiencies of Jiang. In particular, Wheeler is directed to a networked imaging system, and fails to teach or suggest deriving quantitative information (e.g., trabecular thickness, or two-dimensional or three-dimensional spaces between trabeculae) from an x-ray image, as required by claim 1.

Since neither Jiang nor Wheeler teach or suggest, alone or in combination, all limitations of claim 1, the combination cannot make the claim obvious. Additionally, claims 2-4, 8-10, 12-31, and 48-55 which depend from claim 1, are allowable for at least the same reasons discussed above with respect to claim 1.

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It is believed that the application is now in order for allowance and Applicants respectfully request that a notice of allowance be issued. Applicants do not believe that any extension of time is required. However, if an extension of time is required, Applicants hereby request that the associated fees be charged to Deposit Account No. 19-4972. Applicants also request that any other fee required for timely consideration of this application be charged to Deposit Account No. 19-4972. Applicants also request that the examiner contact applicant's attorney, Jonathan Lovely, if it will assist in processing this application through issuance.

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Respectfully submitted,

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